

What is claimed is:

1. A multi-component fiber having enhanced reversible thermal properties, comprising:  
a fiber body formed from a plurality of elongated members, at least one of the elongated members having a temperature regulating material dispersed therein, wherein the temperature regulating material comprises a phase change material.
2. The multi-component fiber of claim 1, wherein the phase change material is selected from the group consisting of hydrocarbons, hydrated salts, waxes, oils, water, fatty acids, fatty acid esters, dibasic acids, dibasic esters, 1-halides, primary alcohols, aromatic compounds, clathrates, semi-clathrates, gas clathrates, stearic anhydride, ethylene carbonate, polyhydric alcohols, polymers, metals, and mixtures thereof.
3. The multi-component fiber of claim 1, wherein the temperature regulating material further comprises a plurality of microcapsules that contain the phase change material.
4. The multi-component fiber of claim 1, wherein the temperature regulating material further comprises silica particles, zeolite particles, carbon particles, or an absorbent material impregnated with the phase change material.
5. The multi-component fiber of claim 1, wherein the elongated members are arranged in an island-in-sea configuration, a segmented-pie configuration, a core-sheath configuration, a side-by-side configuration, or a striped configuration.
6. The multi-component fiber of claim 1, wherein a cross sectional shape of the fiber body is circular, multi-lobal, octagonal, oval, pentagonal, rectangular, square-shaped, trapezoidal, or triangular.
7. A multi-component fiber having enhanced reversible thermal properties, comprising:  
a first elongated member comprising a first polymeric material and a temperature regulating material dispersed within the first polymeric material, wherein the temperature regulating material comprises a phase change material; and  
a second elongated member comprising a second polymeric material, wherein the second elongated member is joined with the first elongated member.

8. The multi-component fiber of claim 7, wherein the phase change material is a hydrocarbon or a mixture of hydrocarbons

9. The multi-component fiber of claim 7, wherein the temperature regulating material further comprises a plurality of microcapsules that contain the phase change material.

10. The multi-component fiber of claim 9, wherein the first polymeric material has an affinity for the microcapsules to facilitate dispersing the microcapsules within the first polymeric material.

11. The multi-component fiber of claim 7, wherein the first polymeric material and the second polymeric material are independently selected from the group consisting of polyamides, polyamines, polyimides, polyacrylics, polycarbonates, polydienes, polyepoxides, polyesters, polyethers, polyflourocarbons, formaldehyde polymers, natural polymers, polyolefins, polyphenylenes, silicon containing polymers, polyurethanes, polyvinyls, polyacetals, polyarylates, copolymers, and mixtures thereof.

12. The multi-component fiber of claim 7, wherein the first elongated member is surrounded by the second elongated member.

13. The multi-component fiber of claim 12, wherein the first elongated member is positioned within and completely surrounded by the second elongated member.

14. The multi-component fiber of claim 7, wherein the first elongated member comprises from about 10 percent to about 90 percent of a total weight of the multi-component fiber.

15. A multi-component fiber having enhanced reversible thermal properties, comprising:  
a core member comprising a first polymeric material and a temperature regulating material dispersed within the first polymeric material, wherein the temperature regulating material comprises a phase change material; and  
a sheath member comprising a second polymeric material, wherein the sheath member surrounds the core member.

16. The multi-component fiber of claim 15, wherein the phase change material is selected from the group consisting of hydrocarbons, hydrated salts, waxes, oils, water, fatty acids, fatty

acid esters, dibasic acids, dibasic esters, 1-halides, primary alcohols, aromatic compounds, clathrates, semi-clathrates, gas clathrates, stearic anhydride, ethylene carbonate, polyhydric alcohols, polymers, metals, and mixtures thereof.

17. The multi-component fiber of claim 15, wherein the temperature regulating material further comprises a containment structure that contains the phase change material, and wherein the containment structure comprises microcapsules, silica particles, zeolite particles, carbon particles, or an absorbent material.

18. The multi-component fiber of claim 15, wherein the temperature regulating material is a first temperature regulating material, and wherein the sheath member further comprises a second temperature regulating material dispersed within the second polymeric material.

19. The multi-component fiber of claim 18, wherein the first temperature regulating material and the second temperature regulating material are different.

20. The multi-component fiber of claim 15, wherein the first polymeric material and the second polymeric material are independently selected from the group consisting of polyamides, polyamines, polyimides, polyacrylics, polycarbonates, polydienes, polyepoxides, polyesters, polyethers, polyflourocabons, formaldehyde polymers, natural polymers, polyolefins, polyphenylenes, silicon containing polymers, polyurethanes, polyvinyls, polyacetals, polyarylates, copolymers, and mixtures thereof.

21. The multi-component fiber of claim 15, wherein the first polymeric material has an affinity for the phase change material, and wherein the second polymeric material encloses the phase change material within the core member and provides a desired physical property to the multi-component fiber.

22. The multi-component fiber of claim 15, wherein the core member is positioned within and completely surrounded by the sheath member.

23. The multi-component fiber of claim 15, wherein the core member is concentrically positioned within the sheath member.

24. The multi-component fiber of claim 15, wherein the core member is eccentrically positioned within the sheath member.

25. The multi-component fiber of claim 15, wherein a cross sectional shape of the core member is circular, multi-lobal, octagonal, oval, pentagonal, rectangular, square-shaped, trapezoidal, triangular, or wedge-shaped.

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